MILLS (C.K.)

# SOME PHASES OF SYPHILIS OF THE BRAIN.

*A Clinical Lecture delivered at the Philadelphia Hospital.*

BY

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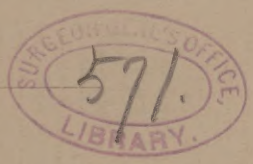


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GENTLEMEN: Many diseases that are usually considered under other special heads are really syphilitic in origin. Encephalic and spinal tumors, arteritis and thrombosis of both cerebral and spinal arteries, hemorrhages, which are frequently the result of rupture of vessels weakened by syphilitic disease; and finally meningitis, encephalitis, and myelitis, and both meningoencephalitis and meningomyelitis, may all be syphilitic affections. Syphilis needs to be considered separately for certain practical reasons, one of the most important of which is that the lesions of syphilis are frequently not only multiple, but are of different pathologic types in the same case, and hence give a symptom-picture that has a stamp of its own. It is possible that a single gumma may be the only intracranial lesion, but this is a rare occurrence. Not only do we have in nervous syphilis lesions diverse in their pathologic characteristics, but frequently the disease shows a tendency to arrange itself under certain peculiar clinical types. The best method of considering syphilis of the nervous system is probably one that presents a series of such clinical types that occur with considerable frequency, and

which can be related with comparative accuracy to lesions of a definite character. Most of the attempts to classify syphilitic diseases of the nervous system have been confusing and lacking in some essential features. Mickle, for instance, gives: (1) cerebrospinal; (2) hereditary; (3) spinal; (4) tabetic; (5) convulsive; (6) neuralgic. Here is a strange admixture of anatomic, etiologic, pathologic, and semeiologic factors as the bases of a single classification. Others, like H. C. Wood, after discussion of several clinical types—epilepsy, paralyses, cerebral and cranial, apoplectic and comatose attacks, and episodes of somnolence—abandon classes entirely for the study of special symptoms.

In approaching the subject of nervous syphilis, the first great general subdivision which should be made of cases as they present themselves in ordinary practice is into the affections directly due to the continuing action of the specific virus, and those which are the more or less remote consequence of this virus. These two classes constitute Fournier's *specific* or *syphilitic* and *parasyphilitic* diseases. The parasyphilitic diseases are affections that are the issue of syphilis, but are not its first and most direct results.

Fournier's distinction is one to be especially borne in mind in connection with the degenerative diseases or affections showing arrest of development, and in which a history of acquired or inherited syphilis is present. "The *specific* group arise from the specific action, processes, and lesions of syphilis. The *parasyphilitic* have origin in syphilis, are products of its action, under its influence, and without it in all probability would not be present; but although thus proceeding originally from syphilis are not of a syphilitic (specific) nature. As parasyphilitic, Fournier classes, for acquired syphilis: pigmentary syphilid; acute hysteroneurasthenia of the secondary stage and later neurasthenic symptoms; tabes; general paralysis; a special form of epilepsy;

and of muscular atrophy. For hereditary syphilis: many general or partial dystrophies and organic malformations (*e. g.*, dental); physical or mental developmental defects, infantile types; cachexia; rickets; hydrocephalus; some cases of true epilepsy; certainly juvenile tabes and general paralysis." (Mickle.) To most of the diseases of the parasyphilitic class no allusion will be made in this lecture, although the wards of this hospital abound in illustrations. Their relation to syphilis needs separate and special consideration.

Let me at the outset, however, say a few words about syphilitic neurasthenia and syphilitic hysteria, typical cases of which have been described by Fournier, Kowalewsky, and Dercum. Typical cases of this category do not present marked ophthalmoscopic changes, nor any evidence of focal nervous disease, although aphasias and palsies are sometimes present. A syphilitic neurasthenic or hysteric is a patient who, with a clear history of syphilis, presents all the characteristics or some of the characteristics of a case of grave hysteria or neurasthenia. The affection may be primarily due to the effect of the syphilitic virus upon the blood; but sometimes it is the result of prolonged antisyphilitic treatment, or it may be dependent upon the psychic shock and depression largely caused by the knowledge of infection; or the changes that have taken place in the vessel-walls and in the nerve-tissues through the action of the poison—although these two last classes might as well be placed under some other head.

The cases now to be shown will be presented in the briefest possible manner in pursuance of my intention to give simply a bird's-eye view of some phases of syphilis of the brain illustrated by clinical cases. It will be understood that in these cases careful studies with detailed records have been made, but that time will permit me to present little more than the baldest outlines. The case with which I shall begin the series that will be used

to illustrate these lectures was first supposed to be a case of hysteria in the male. The patient was sent to the ophthalmologic department of the hospital to have his fields of vision tested for the reversions and contractions so often present in grave hysteria.

CASE I. *Case supposed to be one of hysteria or neurasthenia; ophthalmoscopic examination shows neuritis and perivasculitis; other evidences of cranial-nerve disease and cerebral involvement.*—The patient, P. L., has a clear history of syphilis. He had fallen into a peculiar mental state and presented evidences of general nervous and muscular weakness. On ophthalmoscopic examination, Dr. C. A. Oliver found a most interesting condition of neuritis with perivasculitis. His report is as follows: Marks of old plastic iritis are present, and most pronounced in the left eye. The ophthalmoscope shows a low grade of neuroretinitis, with perivasculitis on both sides and a broad hemorrhage in the right retina. Vision is normal, and the fields of vision are also normal. There is no motor disturbance. On the blackboard is a picture in colors, drawn by Miss M. Washington, the artist, from actual observation of this patient's eyes with the ophthalmoscope. This case is a striking illustration of the possibility of obtaining, by an examination of the eyes, an idea of the pathologic processes probably going on in and around the vessels of the brain. Similar conditions to those visible in the vessels, vessel-walls, and perivascular spaces of the fundus are probably present in the brain. The revelations of the ophthalmoscope led to a closer examination for other symptoms. The patient has a scarcely-perceptible awkwardness of articulation, the right side of his face droops slightly, but his tongue deviates very decidedly to the right. Mentally his condition is one of slight apathy with timidity and apprehension, with also a lack in his powers of attention. At times he is decidedly emotional.

The case is certainly not one of neurasthenia or hysteria pure and simple, although the functional weaknesses and disturbances may be due in part, at least, to the effects of the specific virus. Here are the clearest evidences of cranial-nerve disease and of some cerebral involvement, probably chiefly cortical and prefrontal. My main purpose in presenting this patient is to call attention to the fact that in some cases supposed to be instances of syphilitic neurasthenia and hysteria, signs of organic disease can, on close scrutiny, be found.

The best general classification of syphilitic (true specific) diseases of the nervous system is into *encephalic* or *intracranial*, *encephalospinal*, and *peripheral-spinal* (lesions of spinal nerves). Any one of the subdivisions of the nervous system may be separately affected; any two or more parts may be attacked at the same time, or all may simultaneously be the seat of active specific disease. The difficulties of subclassification are great. In the present lecture only encephalic syphilis will be considered, and chiefly those forms of it in which cranial-nerve disease is present, either alone or associated with disease of other parts of the brain.

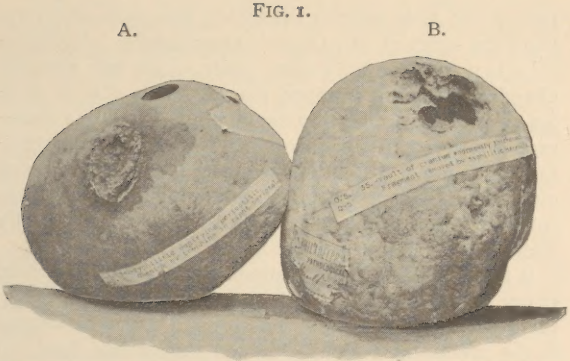
Considering the subject from the pathologic side, perhaps no better practical classification has been made than that of Bramwell, who divides encephalic syphilitic lesions into (1) intracranial nodes with or without meningitis; (2) gummata; (3) lesions of the large or medium-sized bloodvessels, chiefly obliterative endarteritis; (4) diseases of the minute vessels, in many instances periarteritis rather than endarteritis; (5) localized encephalitis in the neighborhood of gummata and meningeal lesions; (6) inflammation of the intracranial portions of the peripheral nerves; and (7) meningeal inflammations without gummatous deposits(?). Almost every one of these classes of lesions will be illustrated by our cases.

Swellings or nodes due to syphilitic disease of the

periosteum, or both the periosteum and the bone, may give rise to symptoms that simulate closely those of meningitis or tumor, and indeed meningitis, tumor, or softening due to vessel-disease may be associated with such nodes. These are often extracranial, and it is by no means uncommon to find intracranial nodes present in the same case with the extracranial swellings. The prominent symptom will usually be headache with evidences of pressure and irritation according to the site of the lesion. When such nodes are prefrontal and large, somnolence and mental hebetude may be marked. Paresis or affections of the special senses may be present. Occasionally these periosteal swellings are situated along the course of the cranial nerves or around their foramens of exit, and thus may give rise to cranial-nerve palsies, anesthesias, and neuralgias. As syphilitic nodes, either intracranial or extracranial, when efficiently treated, have a more favorable prognosis than some of the varieties of encephalic syphilis, it is important to bear in mind the probability of their existence. They sometimes melt away under active treatment with mercury and the iodids.

In the present lecture I have not the opportunity of showing any cases which I believe to be illustrations of syphilitic osseous or periosteal disease, although such cases are often found in the nervous wards of the hospital. I exhibit, however, two specimens (Fig. 1) from the Pathologic Museum. One of these is from a patient who was for many months under my care. Syphilitic periostitis, ostitis, and necrosis finally caused the large irregular opening seen in this calvarium. The nervous system of this patient was also attacked in various other ways by the specific virus. The other is a specimen of syphilitic ossifying periostitis. While some cases of periosteal and osseous syphilis are amenable to early and active treatment, this specimen shows the permanent ravages that may be produced by such diseases.

FIG. 1.




Two specimens of syphilitic bone-disease: A, ossifying periostitis; B, greatly thickened and necrosed calvarium.

The next cases, some of which I will present in groups, illustrate some of the most frequent clinical types seen in this hospital.

In the first place, encephalic cases are seen in which for a long time, or perhaps even until a fatal issue results, *only one or two dominating symptoms*, such as *headache*, *somnolence*, etc., are present.

CASE II. *Headache, vomiting, and emaciation; double optic neuritis, but no motor or sensory symptoms.* —This patient is a German, 30 years old, with an uncertain past history. His present illness dates back three months. He began to suffer with great pain in the head, had no appetite, and after a few days was attacked with nausea and vomiting, which continued for one or two weeks. He had no paralytic or sensory symptoms. The only symptoms to which attention was attracted until the ophthalmoscope was used were headache, nausea, and vomiting, except that the man was neurasthenic and had lost flesh. I show you upon the blackboard another beautiful illustration in colors, drawn by Miss Washing-

ton, of the optic neuritis present in this case, and I append the notes of Dr. Oliver's examination. Neuroretinitis is present on both sides, older on the left, atrophic changes appearing in many places. This disc is swollen so as to project far into the vitreous, —5 D., as measured by the ophthalmoscope and by actual measurement 1.33 mm. Numerous hemorrhages are seen, some old, but for the most part new, extending along the main trunks of the retinal arteries and veins. Pupils partly dilated and irides sluggish to light. Vision is good.

It is probable that this patient has a gumma situated in one of the so-called latent regions of the brain, as, *e.g.*, the right temporal lobe. The growth might be located in the prefrontal region, although the patient does not present with any decisiveness the psychic phenomena of lesions in this locality. He has made great improvement under the use of potassium iodid in large doses.

CASE III. *Mental weakness, epilepsy, and polyuria.*— This patient is introduced simply to show that in typical cases of syphilitic disease a single symptom like polyuria may be the most prominent feature, or there may be one of two or three features in the symptomatology of the case. He has suffered for a long time from polyuria. He has also a clear history of syphilis and of subsequent convulsive seizures. He is 37 years old. He had a chancre in 1881, and four years later had an eruption, probably syphilitic. He has been somewhat weak mentally since 1888. Ordinary happenings do not leave any impression upon him. In 1890 he had a fit for the first time. When first affected he had four or five a week, but at present he averages one every two or three weeks. He bites his tongue in the seizures. He complains of great thirst and voids urine almost every half-hour day and night. In this case some local lesion of the pons may have caused the polyuria, while more diffuse lesions and secondary degeneration have induced the epilepsy and mild dementia.

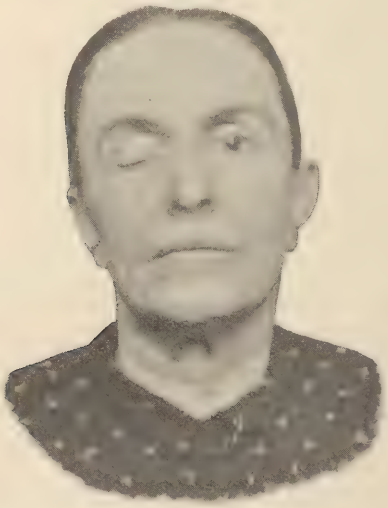
In a certain rather large percentage of cases of intracranial syphilis, *affections of the cranial nerves* are the chief or only phenomena. In the first place, I say that they are *the chief* phenomena because in not a few of these cases casual observation or close investigation will show that other parts of the encephalon have been attacked by the disease. I have the opportunity of presenting an unusual series of cases illustrating the occurrence of these cranial-nerve affections, either alone or with symptoms showing implication of other regions than the base of the brain. The first case of this series is one in which marked disease of the cortex and of at least one of the cranial nerves is present at the same time. This is a somewhat frequent clinical combination in encephalic syphilis.

Case IV. *Oculomotor paralysis with evidences of meningeal and cortical disease.*—This patient, M. F., is a woman, 45 years old, who has had no living children, but who has had three stillbirths. Her present illness has been attributed to a sunstroke, and this may well be true, and yet the case be one of intracranial syphilis, for excessive heat, traumatisms, and various other causes may light up the lurking syphilitic fire. On admission she was much deranged and papers were made out to send her to the insane-department, but the mental symptoms clearing up somewhat under specific and sedative treatment, she was admitted to the nervous wards. Her first attack came on with dizziness. About five months before admission she saw double and her right eye was closed by drooping of the upper lid. Just before admission she had a convulsive seizure. Her present condition is one of oculomotor paralysis (Fig. 2), with a slight paresis of the right side of the face, some hesitation of speech, mild dementia, and a tendency to undue emotionality.

In succession I shall next present a case of third-nerve disease with multiple vascular and meningeal

lesions, with the record of the autopsy; a case of paralysis of the abducens and of the iris; a case in which all the cranial nerves from the fifth to the ninth are conjointly involved; and a case in which only the seventh and eighth nerves are implicated. I believe that the origin of each of these cases was syphilis, although it is not possible in at least one of them to obtain a clear history of the infection.

FIG. 2.



Right oculomotor paralysis, facial paresis, and meningocortical disease.

CASE V. *Right oculomotor paralysis with paresis of left leg, and mental symptoms; long apoplectic period preceding death; autopsy showing fibroid meningitis, diffuse endarteritis, multiple thrombosis, and localized softenings.*—I show you now a specimen from a patient

who was brought before the class during my lectures last year. She was 29 years old and had a previous history of dissipation. She had had sore throat, an eruption probably syphilitic, and had lost most of her hair. Her clinical history was that of headache; of an attack in which she lost for a time the use of her left leg; and also of complete right oculomotor paralysis. Later she became irritable, slightly demented and apathetic, and finally stuporous.

FIG. 3.

Oculomotor paralysis, showing ptosis. The case proved to be one of gummatous meningitis, endarteritis, and thrombosis of the internal carotid. The right third nerve was bound down by exudate.

Her eyes were carefully examined by Dr. Oliver, who found on the right side complete ptosis, and all movements of the ball lost, except outward movements and a slight rolling motion upward and outward. The ap-

pearances presented by this patient with the paralyzed eye closed from the ptosis and held open are shown in Figs. 3 and 4. The pupil of this eye was 4 mm. in diameter and immobile; both optic discs were gray. The patient died after a long apoplectic period in which she was comatose

FIG. 4.

Oculomotor paralysis: the eye held open. Same patient as Fig. 3.

most of the time, and during which she had one slight convulsive seizure. The third-nerve paralysis on the right deepened; on the left the pupil became somewhat contracted and fixed. The following interesting condi-

FIG. 5.


Drawing showing the lesions present in Case V (illustrated in Figs. 3 and 4); a, right third nerve adherent to fibroid mass; b, right internal carotid plugged by a thrombus; c, fibroid mass filling the Sylvian fossa and extending backward to the crus d, chiasm; e, left internal carotid containing recently organized thrombus; f, left third nerve; g, left postcommunicant at junction with postcerebral; h, basilar giving off postcerebral.

tions were found at the autopsy: The right internal carotid was free until within 2 or 3 mm. of the point where it penetrated the dura, where a plug, flesh-colored and well organized, was found in the artery. The right postcommunicant was reduced in size and the right precerebral was also very small; the left precerebral was very large, as was also the left postcommunicant. On the right side of the chiasm and the beginning of the optic nerve was a dense mass surrounding the internal carotid, and adherent to the optic nerve and third nerve; the mass lay in the beginning of the fissure of Sylvius, which it fairly obliterated. The left internal carotid also contained a clot about the position at which it joined the precerebral, the medicerebral, and the postcommunicant. The clot also extended into the medicerebral artery about half an inch. The cerebellum, pons, and oblongata showed nothing abnormal. The head of the caudatum and lenticula were softened, the material in the softened cavity being liquid and about the color of pus.

Later I expect to have a full report made of the microscopic examination of this specimen. The gross appearances are well indicated in Fig. 5, which is a drawing made by Miss Washington from the actual specimen and from a photograph of it. This specimen shows a localized gummatous meningitis with fibroid change, associated with syphilitic endarteritis, thrombi forming toward the last. The third-nerve paralysis and the paresis of the left leg are readily explained by the lesion extending from the Sylvian fissure to the crus. The softening of the striatum was due to syphilis of the vessels and thrombosis. The disease of the vessels was chronic and not limited to the base of the brain. This case affords a beautiful illustration of a comparatively common form of encephalic syphilis with lesions diverse both in character and position. It is very probable that similiar lesions are present in Case IV.

CASE VI. *Paralysis of the left abducens, with dilatation and immobility of the right pupil; slight neuroretinitis.*—The patient, J. D., aged 36 years, has a history of gonorrhea, syphilis, and alcoholism. He has improved so much since admission that I cannot show you the most striking feature of his case. As will be observed, a left internal strabismus is now scarcely detectable. On admission he had marked internal squint of this eye. The right pupil is seen to be larger than the left and does not respond to light. From the statements of the patient and the records furnished by Dr. Oliver I learn the following facts: Shortly before his admission to the hospital he had occasional spells of dizziness and some frontal headache. Dr. Oliver found that he had almost complete paralysis of the left external rectus muscle, and associated with this was slight dilatation of the right pupil with almost total immobility of the iris to light. No disturbance of accommodation was present. The left iris was mobile to light and accommodation. Slight neuroretinitis was also present and vision was reduced to 1/7 and 1/9. Under 50 grains of potassium iodid three times daily, the patient's vision became practically normal, the left internal squint nearly disappeared, and the general condition of the patient greatly improved. The dilatation of the pupil remains.

This is clearly a case in which the foci of syphilitic disease attacked the root-fibers or trunk of the sixth nerve and the nucleus or root-fibers for movements of the iris. A nodose periarteritis or a gummatous meningitis, or both conjointly, might account for the phenomena.

CASE VII. *Implication of the cranial nerves (except the sixth) from the fifth to the ninth, inclusive.*—L. D., aged 26 years, a mulatto, had rheumatism about nine months ago. Seven years ago he was struck with a bar of iron on the top of his head. No other history of im-

portance was obtained. Four months before admission he began to have constantly frontal and occipital headache, which gradually grew worse. One morning he found the right side of his face entirely paralyzed, and he had a ringing sensation as if his right ear was "plugged up."

FIG. 6.

Paralysis of the muscles supplied by the seventh and motor fifth nerve on the right side. In this case anesthesia of the right side of the face was also present, total in the ophthalmic division and partial in other divisions of the fifth. The eighth and ninth nerves were also implicated, as shown by loss of hearing and complete loss of taste on one side.

On admission this patient was found to have complete paralysis of all the muscles of the right side of the face, including the muscles supplied by both the seventh nerve and the motor distribution of the fifth (Fig. 6).

No deviation of the tongue was present. Anesthesia was present on the right side of the face, extending from the median line to the angle of the jaw, and from 2 in. above the hair-line to the point of the chin. The conjunctiva of this side was also totally anesthetic, as was the right half of the tongue. No part of the body other than the face was anesthetic. Taste was entirely lost on the right side of the tongue, both at the tip and posteriorly, showing implication of both the chorda tympani and the glossopharyngeal. The electric reactions were those of degeneration in the affected muscles. A watch was heard by the right ear at about 2½ in., and by the left at 18 in. A fine haze spread over the right cornea, which on close examination proved to be due to numerous small points. A beginning neurokeratitis was evidently present. Under large doses of potassium iodid the patient made considerable improvement; in particular the area of anesthesia decreased, the neurokeratitis passed away, and there was considerable improvement of the paralyzed muscles.

In this case a large gumma probably occupied the lateral aspect of the pons and of the upper portion of the postoblongata. The abducens nerve escaped because of its more median position.

Case VIII. *Complete facial and auditory paralysis.*—E. McC., aged 39, on awakening found her face drawn to the left, with mobility to shut her right eye. She is deaf and has marked tinnitus on the right side. The facial lines are obliterated on the same side. It is not necessary to go into a detailed study of this case which is one of comparatively common type. The majority of cases of peripheral facial paralysis, the so-called Bell's palsy, are of rheumatic rather than of syphilitic origin; but when a complete or nearly complete paralysis of the eighth (auditory) nerve is associated with paralysis of the seventh, as in this patient, the lesion is nearly always a gumma or gummatous meningitis localized near the

superficial origin of these two nerves. Doubtless this patient, who has only been recently admitted, will improve rapidly under specific treatment.

It was my intention to take up the subject of syphilitic pseudoparesis in the present lecture, but this and some other phases of encephalic syphilis will have to be postponed to another occasion. We see in this hospital three types of syphilitic disease in which the diagnosis of general paralysis of the insane is the problem. In the first place the case may be one of syphilitic pseudoparesis, the lesion being of Fournier's true specific class, and more or less amenable to treatment; in the second place, the case may be one of general paralysis of the insane in its most usual type—a parasyphilitic disease, one that will not respond to therapeutics; and in the third place, the case may be of transitional type, one in which the pseudoparesis is seen passing into parasyphilitic disease.

It is probable that a true inflammation of the brain-substance sometimes takes place as the result of syphilitic infection, but this is rare, and occurs especially in the vicinity of gummata, and in association with meningitis. A softening which is in reality necrotic and due to obliterative inflammation of the vessels, or to the occlusion of the vessels by a growth or an exudate, is sometimes supposed to be an encephalitis of "inflammatory softening." A form of localized disseminated encephalitis has been described by Charcot and others. The symptoms of local or disseminated encephalitis may be as multiform and irregular as the lesions producing them, and they will often be associated with the symptoms of the associated tumor, meningitis, or arterial disease—indeed, the more pronounced symptomatology of the latter affections will largely mask or overshadow those of encephalitis. Paresis, anesthesias, amnesias, cranial-nerve disorders of slight or marked character, visual,

auditory, and other phenomena of the special senses of cerebral origin, may be among the symptoms.

Some forms of focal sclerosis of the nerve-centers are due to syphilis. According to Lancereaux, the syphilitic forms of sclerosis can be diagnosticated from the non-syphilitic by the greater tendency of the neuroglia to fatty degenerations and by the occurrence of foci of softening in their neighborhood. Whether or not true insular sclerosis of the brain is of syphilitic origin may be regarded as doubtful, although analogy would favor this etiology. Cases of miliary sclerosis and of lobular sclerosis have been recorded with details of autopsies and microscopic examinations of patients with clear histories of syphilis.

In conclusion let me say a few words about the treatment of such cases as have been presented in the course of this lecture. Cases of these clinical types, if recognized early and treated actively, will often respond favorably to treatment; cures, or at least approximate cures, can in some instances be obtained. Often the disease has produced some effects that are permanent, and even when it is arrested it is necessary to keep a watchful eye for years on the patient, reinstituting the treatment at regular periods even if no renewed evidences of syphilis are present.

Many practitioners seem to hail the diagnosis of nervous syphilis with a sense of satisfaction which has underying it a feeling that in all such cases the prognosis is good. It is possible to remedy some of the effects of nervous syphilis or to remove some of its symptoms; it is even possible that a cure may be attained, but this, as Gowers asserts, has never been proved.

The great remedies for nervous syphilis are the iodids and mercury. Authors differ as regards their relative efficiency, most authorities believing that either or both may be efficient. Some would disregard mercury

altogether in many cases. Gowers holds that on the whole the iodid is the most useful and the most certain of the two drugs; still that either may be used with success in most cases. When the iodids fail, which is very rarely if success can be obtained at all, mercury may be used successfully even for the late manifestations.

The administration of large doses of the iodids, as much as from 400 to 800 grains in a day, has been called the American method. The iodids should always be given in an efficient manner. My usual plan is to begin with doses of from 15 to 20 grains three times a day, and increase by 5 or 10 grains daily until as much as a dram or even more is taken three times daily. I have seldom found it necessary to administer more than half an ounce in a day. On the whole, the amount which has proved most successful is from 2 to 3 drams daily. If iodism is produced, it may be necessary to discontinue the use of the drug for a time or to diminish the dose, although strange to say, occasionally when iodism results from the use of small doses, it may be made to disappear by rapidly increasing the amount ingested. Undoubtedly in some cases from 300 to 400 grains of potassium iodid or of sodium iodid daily will be well borne and will produce rapidly beneficial results.

Of the preparations of mercury used by the mouth, calomel and the biniodid are to be preferred, the former in doses of from $\frac{1}{6}$ to $\frac{1}{4}$ of a grain every two or three hours, giving at the same time, if necessary, preparations of opium, such as paregoric or even morphin, in order to prevent looseness of the bowels. The biniodid may be used in doses of from $\frac{1}{12}$ to $\frac{1}{6}$ of a grain every two hours, administering after each dose, if the bowels are affected, small doses of paregoric.

The use of mercury by inunction, if this treatment can be systematically and thoroughly pursued, is one of the best mercurial methods in nervous syphilis. The

official ointment of mercury and mercury oleate are the preferable preparations. From ½ to 1 dram can be used daily. In order to be exact as to the amount used, a good plan is to divide an ounce of the ointment into ½-dram portions, wrapping each of these in paraffin-paper. Mercurial inunctions and the use of potassium and sodium iodids may often be advantageously combined.

In Germany in particular and to some extent in this country, under the influence of the teachings of Wolff and others, mercury has been employed hypodermically and in some instances with striking success. The insoluble compounds of mercury and especially calomel are to be preferred.

Gowers wisely suggests that every syphilitic subject should for five years after the date of his last symptoms have a three-weeks' course of treatment twice a year, during which he should take from 20 to 30 grains of iodid daily. It is better that this rule should be adopted three times during the year instead of twice.